



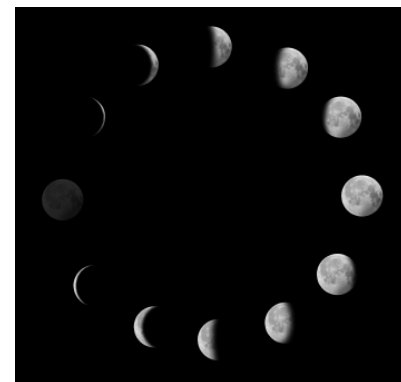
Oreo Moon Phases

Summary:

Use Oreo cookies to create the different phases of the Moon as seen by Earthlings. Then identify where the Sun and Moon are relative to the Earth to explain why we see the various Moon phases.

National Science Education Standards:

- Sky objects have properties, locations, and movements that can be observed and described.
- Objects in the sky have patterns of movements.
- Most objects in the solar systems are in regular and predictable motion.



Desired Learning Outcomes:

- Be able to identify the phases of the Moon.
- Understand how the phases of the Moon relate to the position of the Moon relative to the Sun and Earth.
- Understand why we always see the same side of the Moon and what rotation and revolution have to do with it.

Time/Age Requirements:

- 45 minutes for preparation
- 35 minutes - 45 minutes for activity
- Appropriate age: 10-15

Prior Knowledge Needed:

Understand that the Moon rotates and revolves around the Earth at approximately the same rate at all times. This phenomenon allows us to only see one side of the moon. The Moon does not light up on its own, but is lit by our Sun. Visit the websites on page 5 in the "Useful Links" section to learn more about these facts.

Vocabulary:

- **Rotation** - The movement or path of the Earth or a heavenly body turning on its axis.
- **Revolution** - The orbiting of one heavenly body around another.
- **Blue Moon** - Refers to the second full moon in one month.



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Materials:

- 7 Oreos for each group of students
- 1 plastic butter knife
- Paper towel or napkins
- Phases of Moon Oreo Lab (see page 3 and 4)
- Pen/Pencil

Safety Concerns:

- Teachers should be aware of students with allergies to chocolate. The student could still do the activity, but just would not be able to eat the cookies when they are done.

Procedure:

1. Purchase all supplies before the activity.
2. Create groups of 2-3 people.
3. Distribute supplies to each group.
4. Have one member from each group carefully separate the Oreo cookies, making sure one side has all the frosting and the other side has none. (Use butter knife if necessary). See figure 1.
5. Use your butter knife to carefully scrape the frosting from the first cookie making a shape that resembles the cookie in figure 2. What is the name of this phase?
6. Continue to create the other moon phases with the remaining cookies. Use your notes or the Internet (see Useful Links on page 5) to help guide you. Once you are done have your teacher check your work.
7. Diagram A (page 3) represents the moon's orbit around Earth. Use the diagram to match a cookie with each phase of the moon from Diagram B (page 4).



Figure 1 - Properly separated cookie



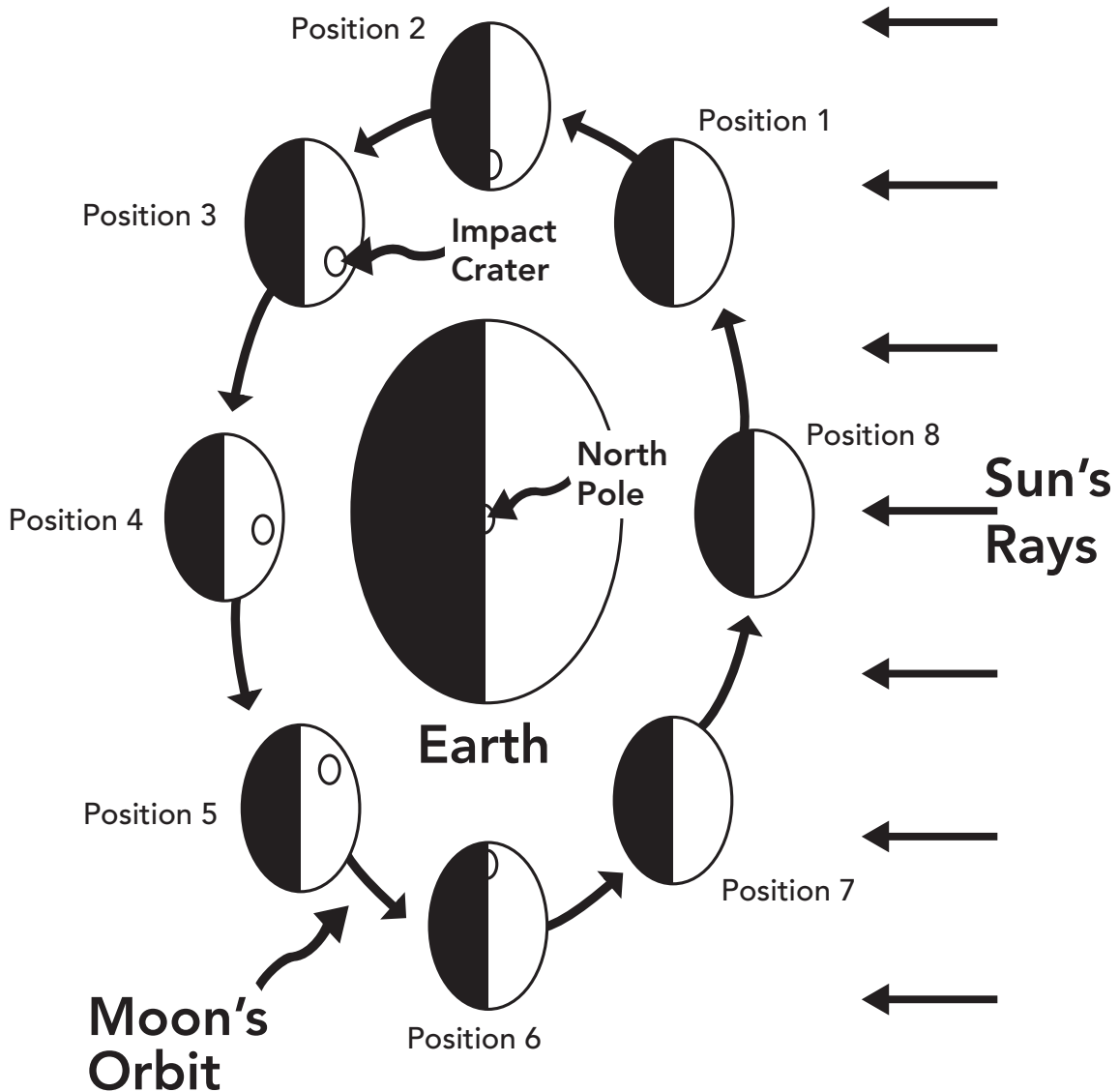
Figure 2 - Frosting scraped to represent a moon phase



Oreo Moon Phases

Diagram A:

This diagram represents the Moon in its orbit around the Earth, as viewed from the Earth's North Pole. Position 1 represents a certain location of the Moon in its orbit.



(Not drawn to scale)

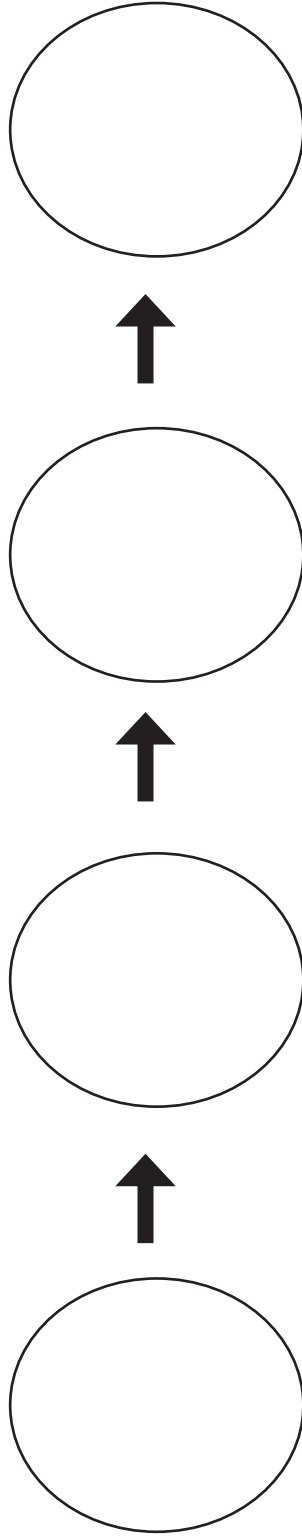
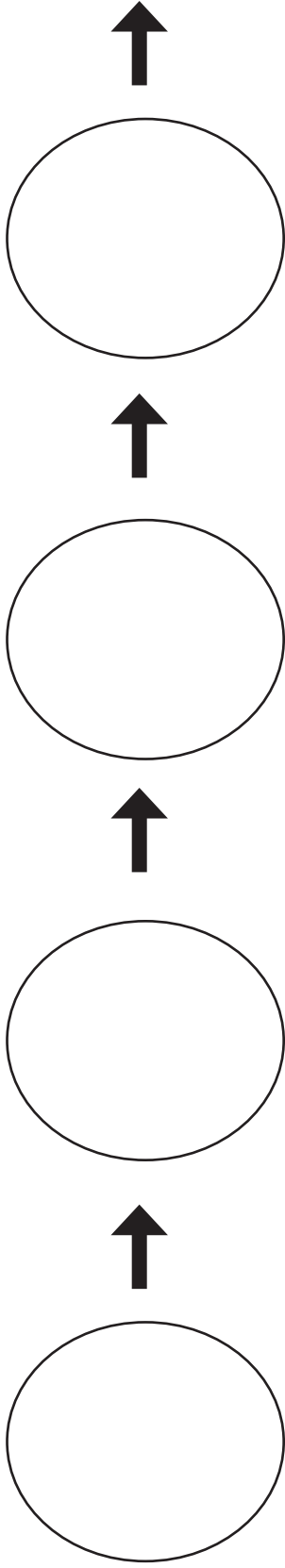
Key	
	Lighted part of Moon
	Dark part of Moon



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Diagram B:

How the Moon is viewed from the Earth - Place your cookie moons here. The phases should correspond with the same phase positions as seen in Diagram A. Label each position with the proper phase name.





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Tying It All Together:

Once students have finished this activity they should understand that the moon is the Earth's only satellite. The Moon rotates and revolves around the Earth in approximately the same amount of time. Due to the Moon rotating and revolving, we always see the same side of the Moon. Earthlings also get to see the Moon go through different phases and occasionally we can see a solar or lunar eclipse.

Assessment:

Upon completion of the activity students should have been able to put their Oreo cookies in the correct position number in Diagram B. Many of the post lab questions allow teachers or parents to see if their child has grasped the concepts of this activity.

Useful Links:

www.moonconnection.com/moon_phases.phtml

Explains through diagram and complete explanation why the phases of the moon appear as they do and what each is called. Many additional links from moon missions to fishing by the moon are listed.

www.space.com/moon/

Provides many links to information about the moon – from Hubble's search for oxygen on the moon to an explanation of the moon's strange bulge.

www.mreclipse.com/Special/LEprimer.html

Provides information about lunar eclipses.

www.shetline.com/java/moonphase/moonphase.html

Click a day of the month and see the moon phase as it will appear from Earth.